

Female Sexual Disorders: Psychiatric Aspects

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Objective: This manuscript reviews the current information concerning female sexual dysfunction that is relevant to general psychiatric practice.

Method: Research identified by the key words sexual dysfunction and prevalence, comorbidity, psychiatric drugs, or pharmacotherapy is reviewed.

Results: Epidemiologic studies indicate that approximately 30% of female subjects between ages 18 and 59 years have sexual complaints of at least 3 months' duration in the past year. A high comorbidity with other psychiatric syndromes exists. Many psychiatric drugs are associated with sexual dysfunction. Drug treatments for female sexual dysfunction are being investigated.

Conclusion: Knowledge concerning the treatment of female sexual dysfunction is important to the general psychiatric clinician.

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Clinical Implications

- An understanding of human sexuality is important for psychiatric clinicians.
- Sexual dysfunction is highly prevalent in psychiatric populations.
- Sexual dysfunction is a frequent side effect of psychiatric drugs.

Limitations

- There are large gaps in our understanding of human sexuality.
- Our knowledge of female sexuality is limited.
- A biopsychosocial approach to research is often lacking.

Key Words: *female sexual dysfunction, review, etiology, epidemiology*

Knowledge about sexual function is important for contemporary psychiatric physicians for several reasons. The most important reason is that sexuality is an important part of our patients' lives. Intimate sexual activity can serve as a vehicle for a sense of emotional connection to another person, and intimate relationships may serve as a buffer against the emotional impact of life stress. Many patients suffer from a decreased sense of competence because they are personally aware of psychological impairment. The presence of sexual impairment may further undermine their sense of personal competence and put an added burden on intimate relationships that may be already stressed by psychiatric difficulties.

Recent information indicates that sexual dysfunction is highly prevalent in the general population and is highly comorbid with many psychiatric syndromes. Also, many commonly

prescribed psychiatric drugs have sexual side effects. In some cases, these side effects may become an unspoken cause of treatment noncompliance.

The diagnosis and treatment of sexual disorders clearly falls within the purview of psychiatry. Human sexuality is influenced by a myriad of physical, psychological, interpersonal, and cultural factors; psychiatry is the only specialty mandating that psychosocial and biological factors must be integrated in both diagnostic understanding and treatment planning (1). The treatment of sexual disorders involves both an understanding of the patient's subjective experience of sexuality and the biological substrate of sexual behaviour.

This paper reviews the current information on female sexual dysfunction that is of interest to a general psychiatric audience. The review focuses on the prevalence of sexual

dysfunction, the comorbidity of sexual disorders with other psychiatric syndromes, sexual side effects of psychiatric drugs, management of these side effects, and current research concerning the pharmacologic treatment of female sexual dysfunction.

History

To put evaluation and treatment of sexual disorders in historical context, it is important to realize that much of the scientific study of human sexuality has occurred in the last 40 years. Prior to 1980, the only official categorization for sexual disorders in the DSM of the American Psychiatric Association was the term “genitourinary disorder.” The publication of *Human Sexual Response* in 1966 (2) and of *Human Sexual Inadequacy* in 1970 (3) stimulated interest in the diagnosis and treatment of human sexual problems. By 1980, the DSM included categories for the diagnoses of disorders of sexual desire, sexual arousal, and orgasm. In 1994, the DSM-IV first included a category for drug-induced sexual dysfunction (4).

Knowledge of female sexuality has consistently lagged behind our knowledge of male sexuality. Data concerning the sexual side effects of drugs were first identified in male patients and subsequently reported in female patients (5). For example, the first case report of antidepressant-induced orgasm disorder in a female patient was reported by Wyatt in 1971 (6). A case series documenting antipsychotic-induced sexual dysfunction in both sexes was reported in 1976 (7). The success of sildenafil as a treatment for male erectile disorder sparked interest in pharmacologic treatments for female sexual disorders. This has led to several clinical trials of pharmacologic treatments for female sexual dysfunction (8,9), the development of new assessment tools (10,11), increased interest in assessing biological contributors to female sexual dysfunction (12,13), and refinement in our diagnostic understanding of female sexuality (14,15). Widespread interest in the treatment of female sexual disorder is quite recent, as is documented by the fact that the first international consensus meeting on diagnosis of female sexual disorders was convened in 1999 (16), and the first international society for the study of female sexuality (International Society for Study of Women’s Sexual Health) was incorporated in 2001, in Boston.

Prevalence

Recent population surveys have indicated that female sexual disorders are highly prevalent in several Western countries. Comparison between countries is problematic because different definitions and methodologies are employed in different surveys. The National Health and Social Life Survey was conducted in 1992 and involved personal interviews with a probability sample of the US population between the ages of 18 to

59 years (17,18). This survey found that 43% of women had had significant sexual complaints in the preceding year. The most common concern was lack of sexual interest (reported by 33% of women), followed by difficulty reaching orgasm (24%) and problems with lubrication (19%). In the UK, Dunn and others (19,20) surveyed a stratified random sample of 4 general practices. Because 95% of the population are registered with a general practitioner, the registers can be used as sampling frames for a population study. Sexual questionnaires were mailed to the study sample, and 44% replied to the survey. Two-fifths of the women in this survey reported a current sexual problem. The most common complaints were difficulty achieving orgasm and vaginal dryness. The survey did not directly inquire about sexual libido. Fugl-Meyer (21) reported a survey of sexual function in a representative sample of Swedish women, aged 18 to 74 years. Forty-eight percent had a sexual dysfunction, defined according to DSM-IV criteria. The most common problem was hypoactive sexual desire disorder, followed by orgasmic and arousal disorders. A history of sexual abuse was closely associated with orgasmic difficulties, and most sexual difficulties increased with increasing age. It is important to note that most surveys find considerable overlap between different sexual disorders; that is, women complaining of low libido frequently also have difficulty becoming sexually aroused or reaching orgasm (21,22).

Comorbidity

Population surveys indicate a high concordance of female sexual dysfunction and marital discord and symptoms of anxiety and depression (20). An Icelandic population survey found that 57% of patients with a lifetime prevalence of a psychosexual disorder had a lifetime prevalence of another psychiatric disorder. The most common lifetime diagnoses associated with sexual disorders were anxiety disorders and dysthymia (23).

Studies of sexual function in psychiatric patients suggest that sexual disorders are more common in patients diagnosed with depression, schizophrenia, anorexia, and anxiety disorders. Interestingly, sexual activity and libido are reported to increase in manic episodes (24). Several clinical investigators have reported that patients with a diagnosis of schizophrenia have symptoms of hypoactive sexual desire disorder (25–29). The decreased libido is not necessarily a result of treatment with neuroleptic agents, because one investigator reported that libido increased when patients were given neuroleptic agents (28). Anorexia nervosa (AN) has been reported to be associated with sexual impairment corresponding either to sexual aversion disorder or hypoactive sexual desire disorder (30–32). Interestingly, the degree of caloric intake has been found to be related to a decreased frequency of masturbation

in patients with AN, and an increased level of sexual drive has been reported to correlate with weight gain in patients with AN. Patients with bulimia nervosa (BN) are more likely to have engaged in coitus than are patients with anorexia. Studies have also found high rates of hypoactive sexual desire disorder in women with obsessive-compulsive disorder (OCD) and panic disorder (33).

Clinicians have recognized for several decades that diminished sexual interest is part of the symptomatic presentation of depressive disorders. Mathew and Weinman reported that diminished libido was common in a series of patients with major depressive disorder (MDD) (34). More recently, Kennedy investigated sexual function in 55 male and 79 female patients with untreated MDD (35). Fifty percent of the female patients reported a marked decrease in libido with the onset of MDD. Fifty percent of the women also reported decreased sexual arousal. Fifteen percent reported difficulty achieving orgasm. Problems with desire were associated with a greater number of depressive episodes. However, both of these reports are limited by the absence of control groups. Kivela and Pakkala studied depressive symptomatology in elderly citizens of Ah-tari, Finland (36,37). In women between the ages of 60 and 69 years, loss of libido was significantly more common in those with depression, although a large number of women without depression in this age group reported loss of libido. In women over age 70 years, loss of libido was quite common in those both with and without depression and was not significantly more common in the women with depression. There is also evidence that women without depression who have a complaint of low libido have a greater lifetime incidence of affective disorder. In 1986, Schreiner-Engel and Schiavi examined couples with a primary complaint of hypoactive sexual desire disorder who did not suffer from depression (38). Patients and control subjects without hypoactive sexual desire disorder were administered the Schedule for Affective Disorders and Schizophrenia-Lifetime Version (SADS-L), and it was found that patients with a current diagnosis of hypoactive sexual desire disorder had an increased lifetime prevalence of affective disorder. The authors hypothesized that there may be a common biological etiology to both affective disorder and hypoactive sexual desire disorder.

The Effect of Psychiatric Drugs on Female Sexual Function

Case reports, clinical series, and controlled studies suggest that a wide variety of commonly prescribed psychiatric drugs may adversely affect female sexual function. Double-blind studies undertaken as early as 1986 and 1987 indicated that monoamine oxidase inhibitors (MAOIs), benzodiazepines, and tricyclic antidepressants (TCAs) were associated with orgasmic delay (39). However, the effect of these agents on

sexual function was not appreciated by most psychiatrists until these drugs had been in clinical use for several years. The reason for the delayed recognition of sexual side effects is probably that most patients do not report sexual side effects unless directly asked by their physicians (40). The most common side effects are delayed orgasm and decreased libido, although decreased lubrication may be associated with sertraline use (41). Psychiatric drugs associated with sexual side effects include the MAOIs, TCAs, selective serotonin reuptake inhibitors (SSRIs), and antipsychotic agents that elevate prolactin. Whether lithium carbonate and anticonvulsants are associated with sexual problems is less clear (42).

Benzodiazepines

A 1986 placebo-controlled study by Riley and Riley found a dose-response relation between diazepam and orgasm induced by sexual stimulation with a vibrator in the laboratory (43). It is unclear whether this effect is common to all the benzodiazepines. Case reports in men suggest that all the benzodiazepines probably delay orgasm (44).

Antidepressants

The effect of antidepressants on sexual function is now well known by most psychiatrists. Marketing efforts by pharmaceutical companies promoting some antidepressants having minimal sexual side effects played a role in the dissemination of this information. Double-blind controlled studies indicate that phenelzine, imipramine (45), and clomipramine (46) cause orgasmic delay. Other double-blind studies indicate that the SSRIs cause orgasmic delay (47). Initially, it appeared that sexual side effects were more common in men than women. However, more recent studies have found similar rates of SSRI-induced sexual dysfunction in both sexes (47,48). Clinical series and studies in men only suggest that the SSRIs as a class cause orgasmic delay (49). Among the SSRIs, sexual side effects appear to be less common with citalopram and fluvoxamine than with paroxetine, sertraline, and fluoxetine (50,51). By contrast, venlafaxine appears to cause sexual problems somewhat less frequently than do the SSRIs (52). The data concerning whether mirtazapine causes sexual dysfunction are conflicting (53,54). Double-blind studies have clearly indicated that nefazodone (55) and bupropion (56) have minimal sexual side effects. In fact, some data suggest that bupropion may have libido-enhancing effects in women with hypoactive sexual desire disorder (57). A large number of case reports have addressed the medical management of SSRI-induced anorgasmia. Interventions include dosage reduction, waiting for tolerance to develop, drug holidays, switching drugs, and use of antidotes. The most common approaches are switching antidepressants (58) or use of antidotes (59). Because of differences in the spectrum of activity

against comorbid conditions such as OCD and panic disorder, switching drugs is not always an option. Case reports indicate that various adjunctive medications may reverse SSRI-induced anorgasmia (60). These include mianserin (61) bupropion and yohimbine (62), amantadine (63), cyproheptadine (64), dextroamphetamine (65), sildenafil (66), granisetron (67), and buspirone (68), among others. Of these drugs, bupropion (69) has probably received the most use. Unfortunately, few of these antidotes have been tested under double-blind conditions. One existing double-blind study, however, failed to find efficacy of gransitron (70). Another double-blind study indicated that bupropion may have efficacy in reversing SSRI-induced libido problems (71). Michelson and others reported a double-blind study showing that 100 mg daily amantadine and 30 mg daily buspirone did not differ from placebo in their efficacy as antidotes (72). However, the dosages employed in this study were much lower than those usually reported to be effective in case reports. A recent double-blind study found that 60 mg daily buspirone differed statistically from placebo in restoring sexual function in women on SSRIs (73). This effect usually occurred within 2 weeks. Case reports indicate that sildenafil reverses SSRI-induced anorgasmia in female patients (74), and double-blind placebo-controlled studies indicate that sildenafil reverses SSRI-anorgasmia in male patients (47). To date, there are no published double-blind studies indicating similar efficacy in female patients.

Antipsychotics

Case reports and clinical series indicate that most traditional antipsychotics can cause difficulties with orgasm (75–77). This effect was not appreciated initially, because most patients on these agents are reluctant to report sexual problems to their physicians. Whether the effect is secondary to alpha-adrenergic blockade or prolactin elevation is unclear (77). However, the newer antipsychotics, which are prolactin-sparing, appear to be associated with a much lower incidence of sexual dysfunction than are antipsychotics that elevate prolactin levels (78). Similarly, rates of sexual dysfunction appear to correlate with degree of prolactin elevation (79). Clozapine, olanzapine, and quetiapine appear to be associated with much lower levels of sexual dysfunction than are conventional antipsychotics, which cause prolactin elevation. One study reported that clozapine has rates of sexual dysfunction similar to those of haloperidol (80), but other investigators have reported dissimilar findings (81). Risperidone, which is associated with prolactin elevation (82), has much higher rates of sexual dysfunction than do olanzapine and quetiapine (83). Case reports indicate several possible approaches to the medical management of antipsychotic-induced sexual dysfunction. Switching from a prolactin-elevating antipsychotic to olanzapine has been reported to

restore normal sexual function (84). Other clinicians have reported that coadministration of dopamine agonists such as bromocriptine and cabergoline may reverse antipsychotic-induced sexual dysfunction (85,86).

Mood Stabilizers

It is unclear whether mood stabilizers impair female sexual function. It is difficult to separate illness cycle from drug effect, because sexual activity frequently increases during manic episodes and decreases during depressive episodes. Case reports suggest that lithium carbonate may decrease libido in male subjects with bipolar illness (28). Long-term therapy with carbamazepine has been shown to increase serum hormone-binding globulin, decreasing free testosterone. Free testosterone is assumed to correlate with libido in both sexes, and there is possibly a mechanism by which carbamazepine could decrease libido with long-term use (87).

Pharmacologic and Mechanical Treatment of Female Sexual Disorders

The successful introduction of sildenafil for the treatment of male erectile dysfunction has contributed to the search for pharmacologic treatments for female sexual disorders (88). To date, these approaches have focused either on the use of peripheral vasodilators or on agents assumed to increase libido by effects on the central nervous system. Many investigators assumed that vasoactive drugs would have benefits for the treatment of female sexual dysfunctions similar to those they have for erectile dysfunction. In many ways, this was a logical assumption, because sexual arousal in both sexes involves vasodilation, and arousal appears to involve an integration of both central and peripheral stimuli. However, previous epidemiologic research has indicated that isolated complaints of sexual-arousal problems in the absence of low-libido complaints were uncommon, and moreover, extensive research literature predating the introduction of sildenafil consistently found a large discrepancy between measures of subjective and objective sexual arousal in women. For example, female subjects shown erotic videotapes often demonstrate vasocongestive responses in the absence of subjective arousal (89). Clinical trials of sildenafil and other vasoactive substances have shown that these drugs increase genital vasocongestion and lubrication (90,91), but there is no evidence to date that these agents have therapeutic benefit for female sexual disorders (92). Caruso and coworkers conducted a triple-crossover double-blind placebo-controlled study that studied the efficacy of sildenafil in premenopausal women with normal libido, but with arousal and orgasm difficulties (93). They found that sildenafil improved various aspects of sexual function in this population. It is important to note, however, that the population studied consisted of premenopausal women in good relationships and with normal libido—a population that

also would have an excellent prognosis with behavioural therapy.

A clitoral vacuum erection device has been recently approved by the FDA (94). This small, battery-powered device is designed to enhance blood flow to the clitoris. There are no large-scale studies in clinical populations demonstrating a benefit of using this device. Efforts to increase libido centrally have focused on the use of dopaminergic agents or androgen supplementation. A recent single-blind study of women with hypoactive sexual desire found suggestive evidence that bupropion may have a beneficial effect on libido in premenopausal women without depression and with hypoactive sexual desire disorder (95). Approximately 30% of women with severe acquired global hypoactive sexual desire disorder reported an increase in various measures of libido while on 300 mg daily in this 8-week trial. Double-blind trials with this agent are currently in progress.

A fairly extensive research literature suggests that a relation may exist between libido and androgen levels in women. Studies by Gelfand and Sherwin studied androgen and estrogen therapy in women who had total abdominal hysterectomies and bilateral oophorectomies (96). The women who received androgen-estrogen therapy had higher levels of sexual desire and arousal than did women who received placebo plus estrogen. This study has been criticized for using supra-physiological levels of androgen. A recent multisite double-blind study of androgen-estrogen therapy delivered transdermally in postmenopausal women found that high-dosage testosterone increased both subjective and objective measures of libido (97). The dosage level producing a better response than placebo produced total testosterone levels above the normal range and serum free testosterone levels at the high end of the normal range. It is likely that chronic treatment at that dosage would have resulted in masculinization and other side effects. It has not been shown that changes in testosterone levels that are within normal limits influence libido. A recent study demonstrated a relation between acute androgen administration and short-term changes in sexual arousal: Tuiten and coworkers reported the effect of single sublingual doses of testosterone undecanoate on subjective and objective responses to sexually explicit films (98). Plasma testosterone peaked in 90 minutes, whereas genital responsiveness peaked in 3 to 4 hours. On the day of treatment, women reported increased sexual sensations and increased libido. The subjects were normal volunteers, not patients.

Conclusions

It is clear that understanding human sexuality and sexual dysfunction is important for contemporary psychiatric clinicians. Sexual difficulties are highly prevalent in the general population, part of the symptomatic presentation of many psychiatric

diseases, a frequent side effect of psychiatric treatment, and potentially an unspoken cause of treatment noncompliance. With changes in societal mores concerning human sexuality, especially female sexuality, patients are becoming less reluctant to discuss sexual problems with their physicians. We need to be ready to address these concerns when our patients bring them to us.

Despite advances in the treatment of human sexual problems, large gaps remain in our knowledge of human sexuality. Our knowledge of female sexuality is even less developed than our knowledge of male sexuality. Numerous pharmacologic interventions for female sexual concerns are currently being evaluated for efficacy; it is critical that the field of psychiatry, with its emphasis on the biopsychosocial approach to diagnosis and treatment, be actively involved in this research. Human sexuality is an activity with numerous symbolic meanings to the individual and her partner. These symbolic meanings also need to be considered when intervening on a biological level.

References

- Gabbard GO. Mind and brain in psychiatric treatment. In: Gabbard GO, editor. *Treatments of psychiatric disorders*. 3rd ed. Washington (DC): American Psychiatric Press; 2001. p 3–20.
- Masters WH, Johnson VE. *Human sexual response*. Boston: Little Brown; 1966.
- Masters WH, Johnson VE. *Human sexual inadequacy*. Boston: Little Brown; 1970.
- Segraves RT. Historical and international context of nosology of female sexual disorders. *J Sex Marital Ther* 2001;27:205–8.
- Segraves RT. Psychiatric drugs and inhibited female orgasm. *J Sex Marital Ther* 1988;14:202–7.
- Wyatt RJ, Fram DH, Buchbinder R. Treatment of intractable narcolepsy with a monoamine oxidase inhibitor. *J Clin Psychopharmacol* 1971;85:987–91.
- Kotin J, Wilbert D. Thioridazine and sexual dysfunction. *Am J Psychiatry* 1976;133:82–5.
- Shifren JL, Braunstein GD, Simon JA, Casson PR, Buster JE, Redmond GP, and others. Transdermal testosterone treatment in women with impaired sexual function after oophorectomy. *N Engl J Med* 2000;343:682–8.
- Basson R, McInnes R, Smith M, Hodgson G, Spain T, Koppiker N. Efficacy and safety of sildenafil in estrogenized women with sexual dysfunction. *Obstet Gynecol* 2000;S54.
- Rosen R, Brown C, Heiman S, Leiblum S, Meston C, Shabsigh R, Ferguson D, D'Agostino R. The Female Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. *J Sex Marital Ther* 2000;26:191–208.
- McGahuey CA, Gelenburg AJ, Laukes CA, Moreno FA, Delgado PL, McKnight KM, and others. The Arizona Sexual Experience Scale (ASEX): reliability and validity. *J Sex Marital Ther* 2000;27:25–40.
- Labrie F. Androgen deficiency syndrome in women: role of androgens and their precursor DHEA in women. Paper presented at the Female Sexual Function Forum; October, 2001; Boston (MA).
- Guay AT. Serum androgen and androgen precursor hormone levels in women with and without sexual dysfunction. Paper presented at the Female Sexual Function Forum; October, 2001; Boston (MA).
- Plaut SM. New diagnostic categories for female sexual dysfunction: does the falling tree make a sound if no one is there to hear it? *J Sex Marital Ther* 2001;27:193–6.
- Vroege JA, Gijs L, Hengeveld MW. Classification of sexual dysfunctions in women. *J Sex Marital Ther* 2001;27:237–44.
- Basson R, Berman J, Burnett A, Derogatis L, Fergusin D, Fourcroy J, and others. Report of the International Consensus Development Conference on female sexual dysfunction: definitions and classifications. *J Sex Marital Ther* 2001;27:83–94.
- Laumann EO, Gagnon JH, Michael RT, Michaels S. *The social organization of sexuality: sexual practices in the United States*. Chicago: University of Chicago Press; 1994.
- Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: prevalence and predictors. *JAMA* 1999;281:537–44.

19. Dunn KM. Association of sexual problems with social, psychological, and physical problems in men and women: a cross sectional survey. *J Epidemiol Community Health* 1999;53:144–8.
20. Dunn KM. Satisfaction in the sex life of a general population sample. *J Sex Marital Ther* 2000;26:141–51.
21. Fugl-Meyer KS. Epidemiology of female sexual function. Paper presented at Female Sexual Function Forum; October, 2001; Boston (MA).
22. Segraves KB, Segraves RT. Hypoactive sexual desire disorder: prevalence and comorbidity in 906 patients. *J Sex Marital Ther* 1991;17:1–9.
23. Lindal E, Stefansson JG. The lifetime prevalence of psychosocial dysfunction among 55- to 57-year olds in Iceland. *Soc Psychiatry Psychiatr Epidemiol* 1993;28:91–5.
24. Goodwin FK, Jamison KR. Manic depressive illness. New York: Oxford University Press; 1990.
25. Lyketos GC, Sakka P, Mailis A. The sexual adjustment of chronic schizophrenics: a preliminary study. *Br J Psychiatry* 1983;143:376–82.
26. Miller LJ, Finnerty M. Sexuality, pregnancy and childrearing among women with schizophrenia-spectrum disorders. *Psychiatr Serv* 1996;47:502–6.
27. Gift TE, Wynne LC, Harder D. Sexual life events and schizophrenia. *Compr Psychiatry* 1988;29:151–6.
28. Aizenberg D, Sigler M, Zemishlany Z, Weizman A. Lithium and male sexual function in affective patients. *Clin Neuropharmacol* 1996;19:515–9.
29. Kockott G, Pfeiffer W. Sexual disorders in nonacute psychiatric outpatients. *Compr Psychiatry* 1996;37:56–61.
30. Raboch JS, Faltus F. Sexuality of women with anorexia nervosa. *Acta Psychiatr Scand* 1991;84:9–11.
31. Morgan JF, Lacey JH, Reid F. Anorexia nervosa: changes in sexuality during weight restoration. *Psychosom Med* 1999;61:541–5.
32. Wiederman MW, Pryor T, Morgan CD. The sexual experience of women diagnosed with anorexia nervosa and bulimia nervosa. *Int J Eat Disord* 1996;19:109–18.
33. Minnen AV, Kampman M. The interaction between anxiety and sexual functioning: a controlled study of sexual functioning in women with anxiety disorders. *Sexual and Relationship Therapy* 2000;15:47–57.
34. Mathew R, Weinman M. Sexual dysfunction without tricyclics in depression. *Arch Sex Behav* 1982;11:323–8.
35. Kennedy SH, Dickens SE, Eisfeld BS, Bagby RM. Sexual dysfunction before antidepressant therapy in major depression. *J Affect Disord* 1999;56:210–18.
36. Kivela SL, Pakkala K. Clinician-rated symptoms and signs of depression in aged Finns. *Int J Soc Psychiatry* 1988;34:274–84.
37. Kivela SL, Pakkala K. Symptoms of depression in old people in Finland. *Zeitschrift fur Gerontologie* 1988;21:257–63.
38. Schreiner-Engel P, Schiavi R. Lifetime psychopathology in individuals with low sexual desire. *J Nerv Ment Dis* 1986;174:646–51.
39. Segraves RT. Sexual side effects of psychotropic agents. In: Halaris A, editor. *Bailliere's Clinical Psychiatry*. London: WB Saunders; 1997. p 153–70.
40. Segraves RT. Psychiatric drugs and orgasm in the human female. *J Psychosom Obstet Gynec* 1985;4:125–8.
41. Segraves RT, Kavoussi R, Hughes A, Batey S, Johnston, Donahue R, and others. Evaluation of sexual functioning in depressed outpatients: a double blind comparison of sustained release bupropion and sertraline treatment. *J Clin Psychopharmacol* 2000;20:122–6.
42. Nkanginieme I, Segraves RT. Neuropsychiatric aspects of sexual disorders. In: Fogel B, editor. *Neuropsychiatry*. Baltimore: Williams and Wilkins; Forthcoming.
43. Riley A, Riley E. The effect of single dose diazepam on sexual response induced by masturbation. *Sex Marital Therapy* 1986;1:49–53.
44. Segraves RT. The effects of minor tranquilizers, mood stabilizers and antipsychotics on sexual function. *Primary Psychiatry* 1999;6:37–40.
45. Harrison W, Rabkin J, Erhardt A, Stewart J, McGrath P, Quitkin E. Effect of antidepressant medication on sexual function: a controlled study. *J Clin Psychopharmacol* 1986;6:144–9.
46. Monteiro W, Noshirvani H, Marks I, Lelliott P. Anorgasmia from clomipramine in obsessive compulsive disorder: a controlled trial. *Br J Psychiatry* 1987;151:107–12.
47. Zajecka J, Mitchell S, Fawcett J. Treatment-emergent changes in sexual function with selective serotonin reuptake inhibitors as measured with the Rush Sexual Inventory. *Psychopharmacol Bull* 1997;33:755–60.
48. Labbate LA, Grimes J, Hines A, Oleshansky MA, Arana G. Sexual dysfunction induced by serotonin reuptake antidepressants. *J Sex Marital Ther* 1998;24:3–12.
49. Shen WW, Hsu JH. Female sexual side effects with selective serotonin reuptake inhibitors: a descriptive clinical study of 33 patients. *Int J Psychiatry Med* 1995;25:239–48.
50. Montejó AI, Llorca G, Izquierdo JA, Ledesma A, Bousono M, Calcedo A, and others. SSRI-induced sexual dysfunction. Fluoxetine, paroxetine, sertraline, and fluvoxamine in a prospective, multicenter and descriptive clinical study of 344 patients. *J Sex Marital Ther* 1997;23:176–94.
51. Waldinger MD, Hengeveld MW, Zwiderman AH, Olivier B. Effect of SSRI antidepressants on ejaculation: a double-blind, randomized, placebo-controlled study with fluoxetine, fluvoxamine, paroxetine and sertraline. *J Clin Psychopharmacol* 1998;18:274–81.
52. Kennedy SH, Eisfeld BS, Dickens SE, Bacchiochi JR, Bagby RM. Antidepressant-induced sexual dysfunction during treatment with moclobemide, paroxetine, sertraline, and venlafaxine. *J Clin Psychiatry* 2000;61:276–81.
53. Farah A. Relief of SSRI-induced sexual dysfunction with mirtazapine treatment. *J Clin Psychiatry* 1999;60:260–1.
54. Clayton A, Leadbetter R, Bass K, Bolden-Watson C, Donahue R, Jamerson B, and others. Antidepressant-associated sexual dysfunction: risk factors. Poster presentation at New Clinical Drug Evaluation Unit; May, 1999; Boca Raton (FL).
55. Ferguson JM, Shrivastava RK, Stahl SM, Hartford JT, Borian F, Ieni J, and others. Reemergence of sexual dysfunction in patients with MDD: double-blind comparison of nefazodone and sertraline. *J Clin Psychiatry* 2001;62:24–9.
56. Croft H, Settle E, Houser T, Batey S, Donahue R, Ascher J. A placebo-controlled comparison of the antidepressant and sexual functioning aspect of bupropion sustained release and sertraline. *Clin Ther* 1999;21:643–58.
57. Segraves RT, Croft H, Kavoussi R, Ascher J, Batey S, Foster V, and others. Bupropion sustained release (SR) for the treatment of hypoactive sexual desire disorder (HSDD) in nondepressed women. *J Sex Marital Ther* 2001;27:303–16.
58. Walker PW, Cole J, Gardner E, Hughes A, Johnston A, Batey S, and others. Improvement in fluoxetine-associated sexual dysfunction in patients switched to bupropion. *J Clin Psychiatry* 1993;54:459–65.
59. Clayton DO, Shen WW. Psychotropic drug-induced sexual function disorders. *Drug Safety* 1998;19:299–312.
60. Rosen RC, Lane RM, Menza M. Effects of SSRIs on sexual function: a critical review. *J Clin Psychopharmacol* 1999;19:67–85.
61. Aizenberg D, Noar S, Zemishlany Z, Weizman A. The serotonin antagonist mianserin for treatment of serotonin reuptake inhibitor induced sexual dysfunction in women: an open label add on trial. *Clin Neuropharmacol* 1999;22:347–50.
62. Balon R. Fluoxetine-induced sexual dysfunction and yohimbine. *J Clin Psychiatry* 1993;54:161.
63. Shrivastava R, Shrivastava S, Overweg N. Amantadine in the treatment of sexual dysfunction associated with selective serotonin reuptake inhibitors. *J Clin Psychiatry* 1995;15:83–4.
64. Riley A, Riley E. Cyproheptadine and antidepressant-induced anorgasmia. *Br J Psychiatry* 1986;148:217–8.
65. Gitlin MJ. Treatment of sexual side-effects with dopaminergic agents. *J Clin Psychiatry* 1995;56:124.
66. Pies R. Safety of sildenafil for antidepressant related sexual dysfunction. *J Clin Psychiatry* 1999;60:792.
67. Berk M. Serotonergic targets in the treatment of antidepressant induced sexual dysfunction: a pilot study of gniaisetron and sumatriptan. *Int Clin Psychopharmacol* 2000;15:291–5.
68. Norden MJ. Buspirone treatment of sexual dysfunction associated with selective serotonin reuptake inhibitors. *Depression* 1994;2:109–12.
69. Ashton A, Rosen R. Bupropion as an antidote for serotonin reuptake inhibitor induced sexual dysfunction. *J Clin Psychiatry* 1998;59:112–5.
70. Nelson EB. A placebo-controlled crossover trial of gniaisetron in SRI-induced sexual dysfunction. *J Clin Psychiatry* 2001;62:469–73.
71. Clayton A, McGarvey EL, Warnock J, Kornstein S, Pinkerton RC. Poster presentation at New Clinical Drug Evaluation Unit; May, 1999; Boca Raton (FL).
72. Michelson D, Bancroft J, Targum S, Kim Y, Tepner R. Female sexual dysfunction associated with antidepressant administration: a randomized, placebo-controlled study of pharmacologic intervention. *Am J Psychiatry* 2000;157:239–43.
73. Landen M, Eriksson E, Agren H, Fahlen T. Effect of buspirone on sexual dysfunction in depressed patients treated with selective serotonin reuptake inhibitors. *J Clin Psychopharmacol* 1999;19:268–71.
74. Nurnberg G, Lauriello J, Hensley P, Parker L, Keith S. Sildenafil for iatrogenic serotonergic antidepressant medication-induced sexual dysfunction in four patients. *J Clin Psychiatry* 1999;60:33–5.
75. Baldwin D. Schizophrenia, antipsychotic drugs and sexual function. *Primary Care Psychiatry* 1997;3:115–23.
76. Shen WW, Park S. Thioridazine induced inhibition of female orgasm. *Psychiatry J Univ Ottawa* 1982;7:249–51.
77. Dickson R, Glazer W. Neuroleptic-induced hyperprolactinemia. *Schizophr Bull* 1999;35:75–86.
78. Dickson R, Seeman M, Corenblum B. Hormonal side effects in women: typical versus atypical antipsychotic treatment. *J Clin Psychiatry* 2000;61:10–5.
79. Ghadirian A, Choviard G. Sexual dysfunction and plasma prolactin levels in treated schizophrenic outpatients. *J Nerv Ment Dis* 1982;10:463–73.
80. Hummer M, Kemmler G. Sexual disturbances during clozapine and haloperidol treatment for schizophrenia. *Am J Psychiatry* 1999;56:631–3.
81. Covington L, Cola P. Clozapine versus haloperidol on serum plasma concentrations. *Sexuality and Disability* 2000;18:41–8.
82. Kearns A, Goff D, Hyaden D, Daniels G. Risperidone associated hyperprolactinemia. *Endocrine Practice* 2000;6:425–9.
83. Montejó A, Llorca G. New antipsychotic induced sexual dysfunction: comparative incidence with risperidone and olanzapine using a questionnaire. *American Psychiatric Association, New Research*; 1998. p 152–3.
84. Gazzola L, Opler L. Return of menstruation after switching from risperidone to olanzapine. *J Clin Psychopharmacol* 1998;18:486–7.

85. Marken P, Hyakal R, Fisher J. Management of psychotropic induced hyperprolactinemia. *Clin Pharmacy* 1992;11:851-6.
86. Tollin S. Use of the dopamine agonists bromocriptine and cabergoline in the management of risperidone induced hyperprolactinemia in patients with psychotic disorders. *J Endocrinol Invest* 2000;23:765-70.
87. Isojarvi J, Repo M, Pakarinen A, Lukkarinen O, Myllyla VV. Carbamazepine, phenytoin, sex hormones, and sexual function in men with epilepsy. *Epilepsia* 1995;36:366-70.
88. Tiefer L. The selling of female sexual dysfunction. *J Sex Marital Ther* 2001;27:625-8.
89. Bartik B, Goldberg J. Female sexual arousal disorder. In: Leiblum SR, Rosen RC, editors. *Principles and practice of sex therapy*. New York: Guilford; 2000. p 85-117.
90. Becher EF, Bechara A, Casabe A. Clitoral hemodynamic changes after a topical application of alprostadil. *J Sex Marital Ther* 2001;27:405-10.
91. Islam A, Mitchel J, Rosen R, Phillips N, Ayers C, Ferguson D, and others. Topical alprostadil in the treatment of female sexual arousal disorder: a pilot study. *J Sex Marital Ther* 2001;27:531-40.
92. Basson R. Female sexual response: the role of drugs in the management of female sexual dysfunction. *Obstet Gynecol* 2001;98:350-3.
93. Caruso S, Intelisano G, Lupo L, Agnello C. Premenopausal women affected by sexual arousal disorder treated with sildenafil: a double-blind cross-over placebo-controlled study. *British Journal of Obstetrics and Gynecology* 2001;108:623-8.
94. Billips KL, Berman L, Berman J, Metz M, Glennon M, Goldstein I. A new non-pharmacological vacuum therapy for female sexual dysfunction. *J Sex Marital Ther* 2001;27:435-42.
95. Segraves RT, Croft H, Kavoussi R, Ascher JA, Batey SR, Foster VJ, and others. Bupropion sustained release (SR) for the treatment of hypoactive sexual desire disorder (HSDD) in nondepressed women. *J Sex Marital Ther* 2001;27:303-16.
96. Sherwin BB. Use of combined estrogen-androgen preparations in the postmenopausal: evidence from clinical studies. *Int J Fertil Womens Med* 1998;43:98-103.
97. Shifren J, Braunstein G, Simon J, Casson P, Buster J, Redmond G, and others. Transdermal testosterone treatment in women with impaired sexual function after oophorectomy. *N Engl J Med* 2000;343:1-8.
98. Tuiten A, Van Honk J, Koppeschaar H, Bernaards C, Thijssen J. Time course of effects of testosterone administration on sexual arousal in women. *Arch Gen Psychiatry* 2000;57:149-53.

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Résumé : Troubles sexuels féminins : les aspects psychiatriques

Objectif : Ce manuscrit examine l'information actuelle sur la dysfonction sexuelle féminine qui relève de la pratique psychiatrique générale.

Méthode : La recherche sur la prévalence, la comorbidité psychiatrique et le traitement pharmacologique de la dysfonction sexuelle féminine fait l'objet d'une revue.

Résultats : Les études épidémiologiques indiquent que quelque 30 % des sujets féminins entre 18 et 59 ans ont eu des symptômes sexuels d'une durée d'au moins 3 mois dans l'année écoulée. Il existe une comorbidité élevée avec d'autres syndromes psychiatriques. De nombreux médicaments utilisés en psychiatrie sont associés à la dysfonction sexuelle. Les traitements pharmacologiques de la dysfonction sexuelle féminine font l'objet de recherches.

Conclusion : La connaissance du traitement de la dysfonction sexuelle féminine est importante pour le clinicien psychiatrique général.